through the livelong night, maintained with vociferations by relays of zealous beaters. This deafening din was but a recrudescence of what had occurred a few generations before — a panic which was only exceeded by that which subsequently prevailed over the entire empire.

With regard to sheep, Dr. Macgowan said the ancient mode of writing the character for *yang*, goat, was ideographic — four strokes on the top to represent horns, two horizontal strokes representing legs, and a perpendicular one to represent body and tail. The modern form gives an additional parallel stroke, like the word for horse; it is a simple, not a compound character, and when sheep came to be known, instead of making a new character, the sheep was called the "Hun-goat," thus indicating its origin and affinity. *Yang*, goat, is often translated sheep, the earliest instances being found in one of the Odes, wherein the court habiliments of Wen Wang are called "lamb-skins and sheep-skins." This was about 1160 B.C., but it is doubtful if these robes are really the skins of sheep. It is not certain that such was the case, for the skins of goats were used then, as now, for clothes. Hun-goats are not named before the period of the Tang dynasty, say the seventh century A.D. The goat was one of the sacrificial animals, as at present, and was at the first selected for sacrifice when sheep were unknown.

In the discussion which followed, the conclusions of the paper were not accepted by all the speakers; and it was agreed that the subject was one worthy of scholarly investigation.

NOTES AND NEWS.

THE international Statistical Congress, which met at Vienna in October last, selected the city of Chicago and the summer of 1893 as the place and date of their next meeting, and a committee was appointed to draw up a report on the question of emigration, which is to be discussed at that time.

— It is said that two pieces of aluminium can be soldered together with ease by using silver chloride as a fuse. The pieces of metal are placed together in their proper relative positions, and finely powdered fused silver chloride spread along the line of junction, after which the solder is melted on with a blow-pipe.

— Professor E. A. Fuertes, director of the New York State Weather Bureau, Ithaca, offers to send telegraphic notice of cold waves to such persons in New York State as will display the regulation signals for the benefit of the public. This bureau works in co-operation with the Washington office. A limited number of flags will be furnished by the Ithaca office, and those applicants who cannot be thus supplied will be given a list of dealers from whom the flags may be obtained. The flags, which are of bunting material, may also be made by the persons using them.

— A mine of coal of very fair quality for steaming purposes has been found by accident in the Straits of Magellan, according to *Engineering*. Signor Fossetti, the captain of an Italian steamer, was compelled to anchor in Shagnet Bay to make some repairs, and while there he discovered coal very near the surface. Reaching Valparaiso, he sent a corps of experts to the scene of the discovery in a steam launch, who found that the coal was not only abundant but of excellent quality. The importance of the discovery to the commerce of the world can only be appreciated when it is considered that all steamers passing through the Straits of Magellan are required to coal there, and that the supply has heretofore been brought from Cardiff, Wales.

— According to observations made at recent meetings of the Berlin Medical Society, it would seem that the epidemic of influenza began there during the first week of November, the earliest cases admitted into hospital having come under treatment on Nov. 7. Ruhemann stated that the most noticeable difference between this and the other recent epidemics has been the large number of women and children, and the small number of outdoor workers attacked. Guttmann mentioned an instance in which the admission of a single patient suffering from influenza was shortly followed by the occurrence of 13 fresh cases. Fränkel, who took notes of 138 cases, found that only 9 (6.5 per cent) had suffered from the disease before. The chief complications have been pneumonia and heart failure. The effect on the death-rate in Berlin has not been so marked as during the last epidemic, but it has been considerable (27 per mille as compared with an average of 18). In other parts of Germany the effect has been more marked; thus official statistics show that the death-rate has been doubled, or nearly doubled, in several towns. It rose, for instance, to 44 in Posen (average 21), to 45.6 in Frankfort-on-Oder (average 23.2), in Bremen to 34.3 (average 17.1), and in Rostock to 33.5 (average 15.6).

— The citizens of New York, in 1892, propose to celebrate the discovery of America in their own way, assisted by representatives from every State and territory in the Union. A great food show is to be held at Madison Square Garden in October of that year. It is proposed at this exposition to show the progress made by this country in the last four hundred years as regards our food supply. The United States is the greatest food-producing country in the world, and as food is the one thing above all others that first claims the attention of the human family, it is safe to predict that the coming exposition will prove one of the most interesting events of the century. Only food products will be allowed on exhibition, exhibitors being restricted to manufacturers or producers, no dealer as such being allowed to participate. Every article of food exhibited must bear the bona fide name and address of manufacturers, all fictitious brands being rigidly excluded. Liquors, specifics, and patent medicines will not be allowed. Every manufacturer exhibiting must guarantee that his goods at the exposition are the same as offered for sale to the public. Further information may be obtained of the Food Manufacturers' Association, Hudson and Harrison Street, New York City.

— The United States consul at Bordeaux gives, in a recent report, some interesting information about the wines of the Medoc district. He notes that this district, between the sea on the one hand and the Garonne and Gironde Rivers on the others, is called Medoc (*quasi medio aquæ*), because nearly surrounded by water. It is the northern termination of the extensive tract of sand hills and marsh-land called "Les Landes," extending from Bayonne north, which changes to a bank of gravel on approaching the left bank of the Garonne, and contains some of the most precious vineyards in the world. The soil is of light pebble, and, indeed, on the spots where some of the best wine is produced it appears a mere heap of quartz mixed with the most sterile quality of earth. The best wine is not produced where the bush is most luxuriant, but on the thinner soils, where it is actually stunted, and where weeds disdain often to grow. Here the vine retains the sun's heat about its roots after sunset, so that its juices are matured as much by night as by day. The accumulation of sand and pebbles of which this soil is composed is apparently the spoils of the Pyrenean rocks, brought down by the torrents tributary to the Garonne and other great rivers, and deposited in former ages on the borders of the sea. At a depth of two or three feet from the surface occurs a bed of indurated conglomerate, which requires to be broken up before the vine will grow.

— *Nature*, Jan. 21, contains some extracts from a valuable report by the French agent at Victoria on the salmon industry in British Columbia. Among the details noted by him is the fact that the best fish are almost always taken on the outflow of the river in the place where the fishermen endeavor to meet the fish on their arrival from the sea. A boat is often filled with several hundred fish in a single drift net of from 400 to 500 metres. It is calculated that on certain days the total of the Fraser fishery amounts to not less than 150,000 salmon, which are passed through all the different phases of preserving, and are ready to be forwarded for the market on the same day. An ingenious apparatus used to take the salmon, chiefly on the Columbia River in

the United States, is described. A large wheel, fixed at a certain distance from the bank, is put in motion by the current. The blades of this wheel are provided with a network of iron wire intended to raise from the water any large object coming in contact with them. A sort of bar-work starting from the wheel is so placed as to increase the strength of the current in such a manner as to force the fish passing on this side of the river to go in this direction. The salmon, wishing to cross the very rapid stream where the wheel is placed, is raised out of the water by the iron wire on the blades. In the rotary movement the salmon is carried to the centre of the wheel, whence an inclined plane conducts it into vast open reservoirs placed in the stream, where it can be kept alive for some time. A system of pulleys provides for the raising of these reservoirs, the water flows out, and the salmon is carried in boat-loads just as it is required for preparation.

— A new instrument, called the "schiseophone," lately invented by Captain de Place (a French officer), is described in *Engineering* The object of the instrument is to reveal the presence and the place of any blow-holes, flaws, cracks, or other defects which may exist in the interior of a piece of metal. When these defects are very great, the blow of a hammer on the piece of metal soon betrays their presence, but for small blow-holes, although these may also be very dangerous, there is not enough difference in the sound given by the hammer striking the piece of metal for it to be detected by the ear. The schiseophone, however, will enable that difference to be heard. The apparatus consists of a pin which runs through a microphone of a special construction, which, as usual, is put in connection with the current of an electric battery. Without giving more details of the complicated mechanism of the instrument, one can understand that, when the pin strikes on a good part of the metal tried, a sound is produced, the vibrations of which affect the electric current in a certain way and then a certain sound can be heard in the telephone attached to the instrument. When the pin strikes on a part of the metal where there is a defect, the sound produced is different; the microphone, the current, and the telephone are then affected differently, and the defect existing in the metal is revealed by the difference in the sound heard at the telephone. The ear must, of course, be used to the different sounds to be able to distinguish them; but the necessary skill is not very difficult to acquire. Trials with this instrument have been carried out at Ermont, at the works of the Northern Railway Company of France, in the presence of many engineers, to find defects in the rails. The telephone of the apparatus was placed at a long distance from the rails, from which it was also separated by a wall. The points where the instrument intimated a defect in the metal were carefully noted; the rails were then broken at those places and the defects were actually found.

— The great Australian expedition has succeeded in traversing, from north to south, the first or most southerly of the three great blanks it was commissioned to explore. This is the wide interior space lying between the track of Forrest in 1874 and that of Giles in 1875. The party crossed the boundary between South and West Australia, at a point to the east of Fort Müller, in latitude 26° 10′ south and longitude 128° east, and struck south across the desert from Mount Squires, making for Queen Victoria Spring, on Giles's track of 1875. Arriving at that expected abundant water-supply, they found it nearly dry, and all hopes of a thorough exploration of the region were destroyed. Under these circumstances, and sorely straitened for water, a direct route was taken for the nearest cattle stations, near the southern seaboard of West Australia and Esperance Bay, from which latter port Mr. David Lindsay, the leader, despatched reports of the expedition to Adelaide in October last. The country traversed appeared to have had no rain for two years. Owing to admirable management on the trying march of 560 miles through an almost waterless country, the health of the party had not suffered, and only two of the camels had died. Notwithstanding the utter aridity of the region, Mr. Lindsay remarks that it cannot be called a desert, for the country is more or less clothed with bushes and trees, and for many miles there is a gum-tree forest which extends into South Australia, the trees reaching often three feet in diameter and forty to fifty feet in height. He adds that the clean white trunks and dark-green tops of the trees from a short distance present a charming aspect, but that a nearer examination reveals the usual signs of aridity, the ground being covered with nothing but the desert-loving spinifex and useless shrubs. Mr. E. A. Wells, the surveyor of the expedition, reports that the whole of the country travelled over from Mount Squires was inhabited by natives who got their water-supply partly by draining the roots of certain mallee trees, some of which, distinguishable only by the keen observation of a native, yield quantities of pure water. It was Mr. Lindsay's intention to remain near the south coast for some weeks to restore the strength of the sorely-tried camels, and then to proceed again towards the interior, taking a more westerly route, so as to cross Giles' route at Ullaring, and Forrest's track at Mount Ida, and thence on to Hope's Station *via* the new gold fields. From the last-mentioned place he had hopes of making an excursion south-east as far as latitude 28°, and thus completing sufficiently the examination of the first great area it is the object of the expedition to explore, before proceeding to the second, further north.

— A magnificent diamond, a perfect octahedron, weighing 205 karats, has been purchased from a river digger by a Kimberley buyer, says the *South African Mining Journal.* It is the second largest stone ever found in the Vaal diggings, the largest being the celebrated Spalding diamond of 280 karats, but which was yellow and of bad shape. The price paid for the stone recently found is said to have been £2,000; since his return from the river the buyer has been offered £8,000 for it, which offer has been refused.

— The *Engineering and Mining Journal* of Jan. 30 gives an abstract of a paper by N. Lebedieff on a direct process for producing iron and other metals from their ores. According to this method the metallic oxides are brought in contact with a strong base (potash, soda, lime, or dolomite) by either melting the two in a finely divided state or by roasting such mixture in furnaces provided with a powerful air blast, stirring the mass frequently. To hasten the process common salt or nitre may be added to the roasted mixture. Some combinations of metallic oxides with alkalies may be produced by the wet process; for example, alkaline aluminates. Abstracting the pure metals may then proceed in cupolas, open hearths, or in crucibles in reverberatory furnaces. To the mixtures prepared as above are added charcoal, coke, etc., as well as a proper amount of silicious materials to produce slag upon the reduction of the metals. In order that furnace walls be not attacked the inner lining is best made of neutral material. In the reduction of iron and other metals easily separated by coal, etc., gas, under proper pressure, containing a sufficient amount of CO_2, H, or C_4H_6 may be used instead of coal, etc. Smelting is then carried on in open hearth or reverberatory furnaces. The reducing gases are brought into the molten mass by pipes discharging at a proper height, or by tuyères issuing from chambers in the furnace walls, and connected with pressure generators or gasometers. After properly heating the furnace the carefully mixed oxides and bases, or the oxides previously treated with bases, are introduced and heated until thoroughly melted, when the reducing gases are allowed to penetrate the mass. In proportion to the relative reduction of the metal and separation of the bases a further thin layer of oxides is added. These latter combine readily with the free base and melt, and the gas then again reduces the metal, the base is again separated and thus the process continues. In case the oxides combine readily with the bases by simple smelting the operations can all be carried on in one furnace. Metals melting easily are tapped from time to time as they are produced. Metals which are refractory, such as iron, chromium, etc., can be dosed with materials which lower their melting point (high carbon pig in the case of iron), or else they are treated, after a sufficient quantity has been produced and removed from the furnace, with water or acids after cooling, thereby dissolving the alkaline salts, the insoluble metal remaining undisturbed in the shape of small plates.

— Dr. Charles S. Edwards, fellow in Clark University, Worcester, Mass., has been appointed assistant professor of biology in the University of Texas.